

This Page Is Inserted by IFW Operations
and is not a part of the Official Record

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

IMAGES ARE BEST AVAILABLE COPY.

**As rescanning documents *will not* correct images,
please do not report the images to the
Image Problem Mailbox.**

REMARKS

I. Introduction

Claims 1 to 7, 10 to 12, and 14 to 16 are currently pending in this application. In view of the following remarks, it is respectfully submitted that all of the presently pending claims are allowable, and reconsideration is respectfully requested.

II. Objection and Amendments to the Drawings

The drawings were objected to under 37 C.F.R. § 1.84 (p)(5) because they do not include the reference sign for the cooling bore holes. Applicants respectfully submit that the drawings, as amended, include reference number 14 for the cooling bore holes, and therefore, overcome the present objection to the drawings.

Figure 4 has also been amended so as to narrow the cooling grooves relative to the grooves in Figure 5. No new matter has been added. See original claim 14 and the Specification, for example, at p. 5, lines 15 to 17. Therefore, withdrawal of the objection to the drawings is respectfully requested.

Figure 3 has been amended to more clearly show the varying size of the bore holes, the varying spacing between the bore holes 14 and the varying spacing of the bore holes to the cooling surface along the width of the casting die. No new matter has been added. The Specification states, for example, on page 5, lines 15 to 24 that, as with the cooling channels, the bore holes can be made narrower, spaced closer and brought closer to the pouring surface in the supercritically stressed areas on both sides of the funnel so as to make the cooling surface effectively larger in those areas. See also original claims 12 to 15.

III. Objection to the Specification

The Specification was objected to under 37 C.F.R. §1.75 (d)(1) as allegedly failing to provide proper antecedent basis for the claimed subject matter.

The Office Action alleges that the terms “thickness” in claim 11 and the “reduced” in claim 10 are unclear. Specifically, the Office Action alleges that it is unclear whether the thickness are of a constant value or taper. Given the state of the prior art, Applicants respectfully submit that Applicants are not required to limit these claims to further detail the type and manner of reduction of thickness.

With respect to claim 14, the Office Action alleges that the term

“narrower” is unclear and is deemed to mean “tapering in a conical manner.” Firstly, Applicants submit that the term “narrowing,” in the context of the application, reasonably clearly conveys to one skilled in the art a reduction of width of the cooling grooves. Figures 4 and 5 have been amended to clearly show the reduction of width of the cooling grooves. Secondly, Applicants respectfully disagree with the Examiner’s asserted definition of “narrower” and submit that the ordinary definition of the verb “narrow” is “to lessen in width or extent.” See attached p. 346 of the 1998 Merriam-Webster Dictionary.

Therefore, for all of the foregoing reasons, Applicants respectfully request withdrawal of the objections to the Specification.

IV. Objection to Claim 16

Claim 16 was objected to due to an informality. Applicants respectfully submit that “a” has been deleted after “for,” as suggested by the Examiner. Therefore, withdrawal of the objection to claim 16 is respectfully requested.

V. Rejection of Claims 1 to 7, 10 to 12 and 14 to 16 **under 35 U.S.C. §112, 1st ¶**

Claims 1 to 7, 10 to 12 and 14 to 16 were rejected under 35 U.S.C. § 112, first paragraph, as allegedly containing subject matter which was not described in the Specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. Applicants respectfully disagree for the following reasons.

With respect to claims 1 and 16, the Office Action alleges that the new limitations “cooling bore holes running parallel to the pouring direction” contains new matter given the alleged lack of discussion in the application of the bore hole running **parallel** to the pouring direction. Original claim 12 states that “the casting die body has, running parallel to the pouring direction, a . . . cooling bore hole.” Therefore, Applicants respectfully submit that the recitation of “parallel” in claims 1 and 16 is not new matter. Applicants have amended the Specification to provide direct support for this claim language.

The Office Action further alleges that the new limitation “at least one of running closer to the pouring surface, being configured narrower, and being spaced

closer in at least one portion of the die body” are not clearly shown, resulting in a lack of enablement. Applicant respectfully submits that the Final Office Action’s present assertions and arguments do not reflect the proper standard for determining whether a patent application complies with the enablement requirement that the Specification describe how to make and use an invention that is defined by the claims. See M.P.E.P. § 2164 (even if a claim feature does “lack descriptive support in the disclosure,” this does not mean that the feature is not enabled; a claim feature “in and of itself may enable one skilled in the art to make and use the claim containing” the claim feature).

This standard may not be based on the subjective beliefs of an examiner, but must be based on reasonable arguments that are supported by proper evidence. The Supreme Court established the appropriate standard as requiring the establishment by proper evidence of whether **any experimentation for practicing the invention was undue or unreasonable**. See M.P.E.P. § 2164.01 (citing Mineral Separation v. Hyde, 242 U.S. 261, 270 (1916); In re Wands, 858 F.2d 731, 737, 8 U.S.P.Q.2d 1400, 1404 (Fed Cir. 1988)). Thus, the enablement test is whether “one reasonably skilled in the art could make or use the invention from the disclosures in the patent coupled with information known in the art *without undue experimentation*.” See id. (citing United States v. Teletronics, Inc., 857 F.2d 778, 785, 8 U.S.P.Q.2d 1217, 1223 (Fed. Cir. 1988)).

The Federal Circuit has also stated that there are many factors to be considered in determining whether a specification satisfies the enablement requirement. These factors include but are not limited to the following: the breadth of the claims; the nature of the invention; the state of the prior art; the level of ordinary skill; the level of predictability in the art; the amount of direction provided by the inventor; the existence of working examples; and the quantity of experimentation needed to make or use the invention based on the disclosure. See id. (citing In re Wands, 858 F.2d at 737, 8 U.S.P.Q.2d at 1404 and 1407)). The Federal Circuit has further stated that it is “*improper* to conclude that a disclosure is not enabling based on an analysis of only one of the above factors,” and that an examiner’s analysis must “consider all the evidence related to each of these factors” so that any nonenablement conclusion “must be based on the evidence as a whole.” See M.P.E.P. § 2164.01.

Moreover, to reject the claims as not being enabling, an examiner bears the initial burden of establishing exactly why the “scope of protection provided by a

claim is not adequately enabled by the disclosure.” See id. (citing In re Wright, 999 F.2d 1557, 1562, 27 U.S.P.Q.2d 1510, 1513 (Fed. Cir. 1993)). Accordingly, a specification that teaches the manner and process of making and using an invention in terms that correspond in scope to those used in describing and defining the claimed subject matter complies with the enablement requirement. See id.

In particular, to properly establish enablement or non-enablement, the Office must make use of proper evidence, sound scientific reasoning and the established law. In the case of Ex Parte Reese, 40 U.S.P.Q.2d 1221 (Bd. Pat. App. & Int. 1996), a patent examiner rejected, under the first paragraph of 35 U.S.C. § 112, application claims because they were based on an assertedly non-enabling disclosure, and was promptly reversed because the rejection was based only on the examiner’s subjective belief that the specification was not enabling as to the claims. In particular, the examiner’s subjective belief was simply not supported by any “evidence or sound scientific reasoning” and therefore ignored recent case law -- which makes plain that an examiner, and not an applicant, bears the burden of persuasion on an enablement rejection.

More particularly, the examiner in Ex parte Reese was reversed because the rejection had only been based on a conclusory statement that the specification did not contain a sufficiently explicit disclosure to enable a person to practice the claimed invention without exercising undue experimentation -- which the Board found to be merely a conclusory statement that only reflected the subjective and unsupported beliefs of a particular examiner and that was not supported by any proper evidence, facts or scientific reasoning. See id. Moreover, the Board made clear that it is “incumbent upon the Patent Office . . . to back up assertions of its own with acceptable evidence,” and also made clear that “[where an] examiner’s ‘Response to Argument’ is not supported by evidence, facts or sound scientific reasoning, [then an] examiner has not established a *prima facie* case of lack of enablement under 35 U.S.C. § 112, first paragraph.” See id. at 1222 & 1223 (italics in original). Here, it has not even been conclusorily asserted that undue experimentation would be required.

It is believed and respectfully submitted that a person of reasonable skill in the art could without undue experimentation make and/or use the casting die as recited in the present claims. Figure 3 shows cooling bore holes that are smaller, spaced closer to each and to the cooling surface in the portion of the casting die

between lines B and C. Notwithstanding the above, Figure 3 has been amended to clarify the spacing, size and location of the cooling bore holes. It is therefore respectfully submitted that claims 1 to 7, 10 to 12 and 14 to 16 satisfy the requirements of 35 U.S.C. § 112. Therefore, withdrawal of the 35 U.S.C. § 112 rejection and allowance of these claims are respectfully requested.

VI. Rejection of Claims 1 to 7, 10 to 12 and 14 to 16
under 35 U.S.C. §112, 2nd ¶

Claims 1 to 7, 10 to 12 and 14 to 16 were rejected under 35 U.S.C. § 112, second paragraph, as indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as their invention. Applicants respectfully submit that claims 1 to 7, 10 to 12 and 14 to 16 are allowable for the following reasons.

The second paragraph of 35 U.S.C. § 112 merely requires that the claims set out and circumscribe a particular subject matter with a reasonable degree of clarity and particularity. As provided in M.P.E.P. § 2173.02, the “focus during examination of claims for compliance with the requirement for definiteness of 35 U.S.C. 112, second paragraph is whether the claim meets the threshold requirement of clarity and precision.” In this regard, the “essential inquiry pertaining to this requirement is whether the claims set out and circumscribe a particular subject matter with a reasonable degree of clarity and particularity.” *Id.* (emphasis added). “Definiteness of claim language must be analyzed, not in a vacuum, but in light of [, *inter alia*, the] content of the particular application disclosure [and the] claim interpretation that would be given by one possessing the ordinary level of skill in the pertinent art at the time the invention was made.” *Id.* If the claims, when read in light of the Specification, reasonably apprise those skilled in the art both of the utilization and scope of the invention, and if the language is as precise as the subject matter permits, the second paragraph of 35 U.S.C. § 112 demands no more. M.P.E.P. § 2173.05(a) (citing *Shatterproof Glass Corp. v. Libbey Owens Ford Co.*, 758 F.2d 613, 225 U.S.P.Q. 634 (Fed. Cir. 1985)).

With regard to claim 1, the Office Action alleges that it is unclear what is meant by the limitation “at least one of running closer to the pouring surface, being configured narrower, and being spaced closer in at least one portion of the die body.” Applicants respectfully submit that claim 1 reasonably clearly conveys to one skilled in

the art that the bore holes, consistent with the Examiners second asserted interpretation, at least one of (1) runs closer to the pouring surface, (2) is configured narrower, and/or (3) are spaced closer, in at least one portion of the die body.

The Office Action further alleges that it is unclear what is meant by the limitation "being configured narrower." As indicated above, the ordinary definition of the verb to narrow is "to lessen in width or extent." See attached p. 346 of the 1998 Merriam-Webster Dictionary. Therefore, Applicants submit that it would have been reasonably clear to one of ordinary skill in the art that bore holes configured narrower means bore holes having a smaller diameter. Applicants respectfully further submit that given the prior art does not disclose using narrower or smaller bore holes in at least one portion of the die body, Applicants are not required to further limit that claim language so as to detail whether the bore holes have a constant diameter or taper.

With regard to claims 1 and 16, the Office Action further alleges that it is unclear what is meant by the limitation "being spaced closer" or "being spaced at least 20% closer" for the description of the bore holes. Applicants respectfully submit that one skilled in the art would understand the above language to mean spacing between bore holes. Notwithstanding the above, to expedite prosecution, claim 1 has been amended to recite "being spaced closer to each other," and claim 16 has been amended to recite "being spaced at least 20% closer to each other." No new matter has been added. See, for example, original claim 13, which recites that the spacing of the cooling bore holes in the thermally and mechanically stressed areas is at least 20% less than in the horizontal adjoining areas of the bath surface. See also p. 5, lines 24 to 25, which states that the critical areas of the funnel transition may be provided with additional cooling bore holes.

The Office Action further alleges that the terms "thickness" in claim 11 and "reduced" in claim 10 are unclear. Specifically, the Office Action alleges that it is unclear whether the thickness are of a constant value or taper. As indicated above, given the state of the prior art, Applicants respectfully submit that Applicants are not required to limit these claims to further detail the type and manner of reduction of thickness.

With respect to claim 14, the Office Action alleges that the term "narrower" is deemed to mean "tapering in a conical manner." Applicants respectfully disagree and submit that the ordinary definition of the verb "narrow" is "to lessen in

width or extent.” See attached p. 346 of the 1998 Merriam-Webster Dictionary. Figures 4 and 5 have been amended to clearly show the reduction of width of the cooling grooves. Figures 4 and 5 show a cross section of the cooling grooves, which run parallel to the pouring direction. Cooling grooves positioned along the width of the casting die (Figure 3) in a thermally and mechanically stressed area, for example, between lines B and C, are narrower (Figure 4) along their length, i.e., have a smaller diameter, than in other portions (Figure 5) along the width of the casting die.

The Office Action further alleges that the recitation “funnel” in claim 14 lacks antecedent basis. Applicant respectfully submits that claim 14 has been amended to include antecedent basis for “funnel.”

In view of all of the foregoing, withdrawal of the rejection under 35 U.S.C. § 112 and allowance of claims 1 to 7, 10 to 12 and 14 to 16 are respectfully requested.

VII. Rejection of Claims 1, 10, 12 and 15 Under 35 U.S.C. § 102(b)

Claims 1, 10, 12 and 15 were rejected under 35 U.S.C. § 102(b) as anticipated by U.S. Patent No. 3,595,302 (“Mallener”). Applicants respectfully submit that claims 1, 10, 12 and 15 are not rendered unpatentable by Mallener for the following reasons.

Claim 1 relates to a liquid-cooled casting die for continuous billet casting. Claim 1 recites that the casting die includes a form-giving casting die body (1) having at least one broad side wall with a pouring-surface for receiving molten metal in a pouring direction, a cooling-surface in contact with a cooling bath, the pouring-surface and the cooling-surface defining a thickness. Claim 1 further recites that the cooling bore holes run parallel to the pouring direction and at least one of run closer to the pouring surface, are configured narrower, and are spaced closer to each other in at least one portion of the die body.

Mallener purportedly relates to a cooling structure for continuous-casting mold. The mold is stated to include mold plates having grooves 16 cut into the rear surface. See col. 2, lines 60 to 73. Nowhere, however, does Mallener disclose, or even suggest, cooling bore holes running parallel to the pouring direction and at least one of running closer to the pouring surface, being configured narrower, and being spaced closer to each other in at least one portion of the die body, as recited in

amended claim 1. Therefore, Mallener does not disclose all of the limitations of claim 1.

The Office Action alleges that the grooves 16 qualify as the cooling bore holes. Respectfully, the Specification makes a clear distinction between cooling grooves or channels and bore holes. The term groove or channel is used when referring to the channel illustrated in Figures 4 and 5. The bore holes refer to holes drilled in the casting die between the channels, which is consistent with Figure 3 and original claim 15. Consistent with the above, when the Specification refers to features common to both the coolant grooves or channels and the bore holes it states "the same applies to the cooling bore holes." See p. 5, line 21. Therefore, the grooves 16 of Mallener do not qualify as a cooling bore hole, as recited in claim 1.

To anticipate a claim, each and every element as set forth in the claim must be found in a single prior art reference. *Verdegaal Bros. v. Union Oil Co. of Calif.*, 814 F.2d 628, 631, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987). Furthermore, "[t]he identical invention must be shown in as complete detail as is contained in the . . . claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 U.S.P.Q.2d 1913, 1920 (Fed. Cir. 1989). That is, the prior art must describe the elements arranged as required by the claims. *In re Bond*, 910 F.2d 831, 15 U.S.P.Q.2d 1566 (Fed. Cir. 1990). As more fully set forth above, it is respectfully submitted that Mallener does not disclose, or even suggest, cooling bore holes running parallel to the pouring direction and at least one of running closer to the pouring surface, being configured narrower, and being spaced closer to each other in at least one portion of the die body, as recited in amended claim 1. Therefore, Mallener does not anticipate claim 1. Accordingly, withdrawal of the 35 U.S.C. § 102(b) rejection and allowance of claim 1 is respectfully requested.

As for claims 10, 12 and 15, which ultimately depend from claim 1, and therefore include all the limitations of claim 1, it is respectfully submitted that Mallener does not anticipate these dependent claims for at least the same reasons given above in support of the patentability of claim 1. Accordingly, withdrawal of the 35 U.S.C. § 102(b) rejection and allowance of claims 10, 12 and 15 are respectfully requested.

VIII. Rejection of Claims 1 to 7, 10 to 12 and 14 to 16 Under 35 U.S.C. § 102(e)

Claims 1 to 7, 10 to 12 and 14 to 16 were rejected under 35 U.S.C. § 102(e) as anticipated by U.S. Patent No. 5,927,378 ("Grove et al."). Applicants respectfully submit that claims 1 to 7, 10 to 12 and 14 to 16 are not rendered unpatentable by Grove et al. for the following reasons.

Grove et al. purportedly relate to a continuous casting mold and method. The casting mold is stated to include die plates including cooling slots 36 defined in the mold liner assembly 30 for conducting heat away from the inner surface 32 of the mold liner assembly 30. See col. 3, lines 29 to 31. T_m is stated to be the thickness at the deepened slot portion 40 and T_b is stated to be the thickness at the deepened slot portion 38. See col. 3, lines 55 to 56. The distance $T_b - T_m$ is stated to be varied along the horizontal extent of the mold so as to selectively direct enhanced cooling to certain portions of the inner surface of the mold liner assembly, and, to direct a diminished cooling effect to other portions of the mold liner assembly. See col. 3, line 66 to col. 4, line 4. Nowhere, however, do Grove et al. disclose, or even suggest, cooling bore holes running parallel to the pouring direction and at least one of running closer to the pouring surface, being configured narrower, and being spaced closer to each other in at least one portion of the die body, as recited in amended claim 1.

For the same reasons detailed above with respect to grooves of Mallener, Applicants respectfully submit that the cooling slots 36 of Grove et al. do not qualify as bore holes. Therefore, Grove et al. do not anticipate claim 1. Accordingly, withdrawal of the 35 U.S.C. § 102(e) rejection and allowance of claim 1 are respectfully requested.

As for claims 2 to 7, 10 to 12 and 14 to 16, which ultimately depend from claim 1, and therefore include all the limitations of claim 1, it is respectfully submitted that Grove et al. do not anticipate these dependent claims for at least the same reasons given above in support of the patentability of claim 1. Accordingly, withdrawal of the 35 U.S.C. § 102(e) rejection and allowance of claims 2 to 7, 10 to 12 and 14 to 16 are respectfully requested.

IX. Rejection of Claims 1 to 5, 10, 12 and 15 Under 35 U.S.C. § 102(a)

Claims 1 to 5, 10, 12 and 15 were rejected under 35 U.S.C. § 102(a) as anticipated by WO 97/43063 ("Stagge et al."). Applicants respectfully submit that claims 1 to 5, 10, 12 and 15 are not rendered unpatentable by Stagge et al. for the following reasons.

Stagge et al. purportedly relate to a liquid-cooled mold. Stagge et al. state the mold includes side walls 2 including groove-like coolant channels 10, which can be supplied with cool water. See Abstract and p. 6, third par. of the translation provided by the Examiner. Nowhere, however, do Stagge et al. disclose, or even suggest, cooling bore holes running parallel to the pouring direction and at least one of running closer to the pouring surface, being configured narrower, and being spaced closer to each other in at least one portion of the die body, as recited in amended claim 1.

For the same reasons detailed above with respect to the grooves of Mallener, Applicants respectfully submit that the cooling channels 10 of Stagge et al. do not qualify as bore holes. Therefore, Stagge et al. do not anticipate claim 1. Accordingly, withdrawal of the 35 U.S.C. § 102(a) rejection and allowance of claim 1 are respectfully requested.

As for claims 2 to 5, 10, 12 and 15, which ultimately depend from claim 1, and therefore include all the limitations of claim 1, it is respectfully submitted that Stagge et al. do not anticipate these dependent claims for at least the same reasons given above in support of the patentability of claim 1. Accordingly, withdrawal of the 35 U.S.C. § 102(a) rejection and allowance of claims 2 to 5, 10, 12 and 15 are respectfully requested.

X. Conclusion

It is therefore respectfully submitted that all of the presently pending claims are allowable. All issues raised by the Examiner having been addressed, an early and favorable action on the merits is earnestly solicited.

Respectfully submitted,

Dated: August 4, 2004

By: 

KENYON & KENYON

By: Abraham P. Ronai

Reg. No. 41,275

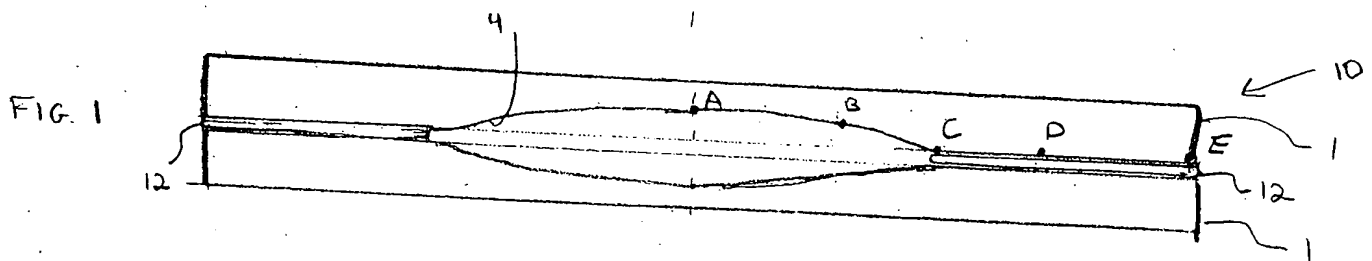
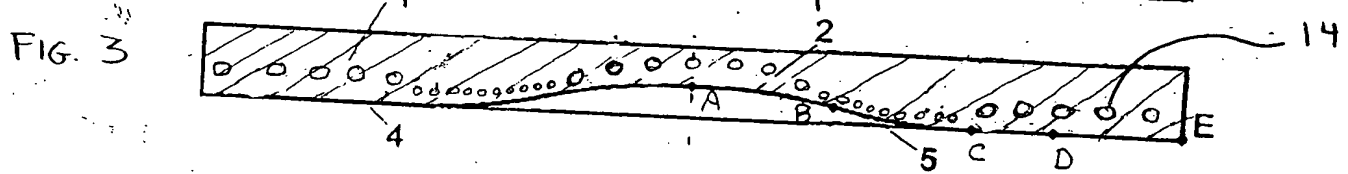
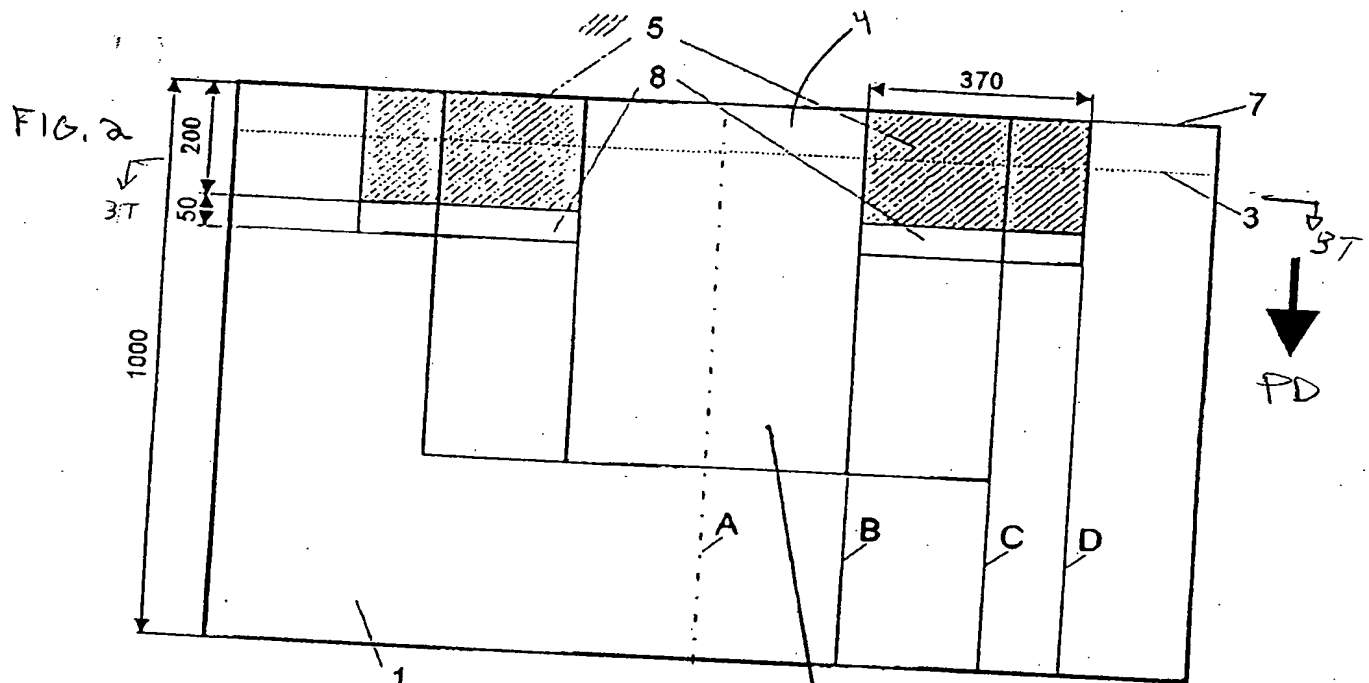
One Broadway

New York, New York 10004

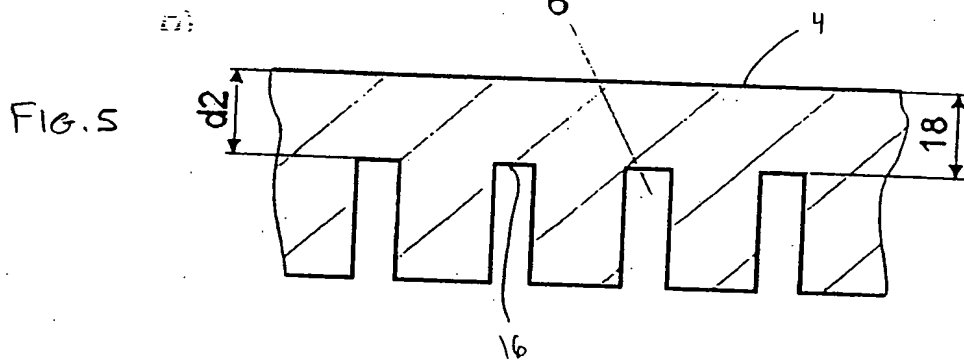
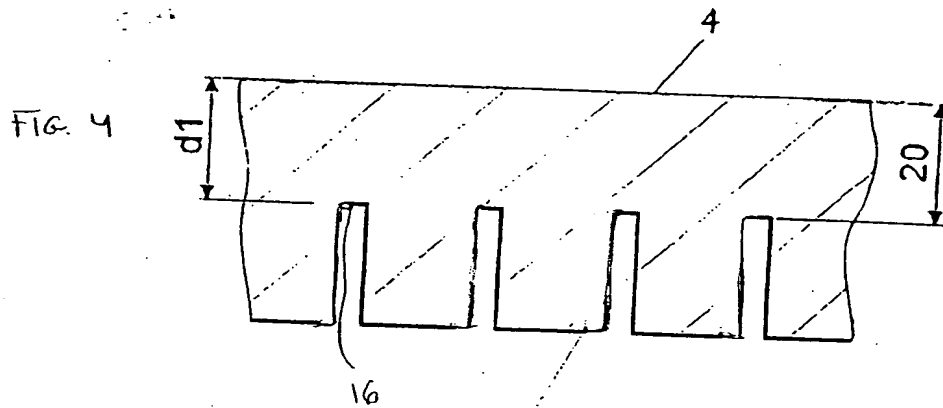
(212) 425-7200

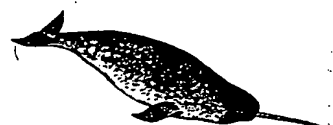
CUSTOMER NO. 26646

Serial No.
09/372,636
Replacement
Sheet



Serial No.
09/372,636
Replacement
Sheet





narwhal

NAS *abbr* naval air station
NASA /'nə-sə/ *abbr* National Aeronautics and Space Administration
nasal /'nā-zəl/ *n* 1 : a nasal part 2 : a nasal consonant or vowel
nasal *adj* 1 : of or relating to the nose 2 : uttered through the nose — **nasally** *adv*
nasal-ize /'nā-zə-'līz/ *vb* -ized; -izing : to make nasal or pronounce as a nasal sound — **nasal-ize** *vi*
nasā-zə-lə-'zā-shən *n*
nascent /'nas-'nt-, 'nās-/ *adj* : coming into existence : beginning to grow or develop — **nascently** *adv*
nas-tur-tium /nə-'stər-shəm, nə-/ *n* : either of two widely cultivated watery-stemmed herbs with thick-spurred flowers and pungent seeds
nas-ty /'nas-tē/ *adj* **nas-tier**; -est 1 : FILTHY 2 : DIRTY, OBSCENE 3 : HARMFUL, DANGEROUS (food is fall) 4 : DISAGREEABLE (~ weather) 5 : MEAN, UNPLEASANT 6 : UNFAIR, DIRTY (a ~ trick) 7 : UNFAIR, DIRTY (a ~ trick) — **nas-tily** /'nas-tē-lē/ *adv* — **nas-tiness** /-tē-nəs/ *n*
nat *abbr* 1 : NATIONAL 2 : native 3 : natural
na-tal /'nāt-əl/ *adj* 1 : NATIVE 2 : of, relating to, or present at birth